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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/054,788	01/25/2002	Akio Miyori	2927-0126P	6282

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EXAMINER	
PALADINI, ALBERT WILLIAM	

ART UNIT	PAPER NUMBER
2125	

DATE MAILED: 08/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/054,788	MIYORI, AKIO	
	Examiner	Art Unit	
	Albert W. Paladini	2125	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 January 2002*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/25/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Referring to figure 3, lines 3-7 on page 17 state "in consideration of computing efficiency, a height H of the spatial part 26 is set to more than 10 times as large as the depth of the concavity 21 nor more than 10000 times as large as the depth thereof or less than 100 times as large as the diameter of the sphere 20." Since sphere 20 is not contained in spatial part 26, it is not understood why "the spatial part is set" "to less than 100 times as large as the diameter of the sphere 20." The specification does not explain how this results in "computing efficiency." Since these criteria support the recited methodology in claim 1 of "forming a spatial part", the rationale must be explained.

Referring to figure 4, line 8 on page 17 to line 4 on page 18 describe the spatial part 26 being divided into the shape of a lattice to form lattice shaped portions 26a. However, the spatial part 26 depicted in figure 3 is a three dimensional volume. The

lattice structure shown in figure 4 depicts two dimensional area elements. There is no explanation of how the area elements of figure 4 are taken from a surface of figure 3. The specification must explain the mapping from the volume to the area. Which portion of the volume in figure 3 does figure 4 represent?

From the perspective of simulating or modeling a three dimensional shape, normally the shape would be divided into finite volumetric segments or elements. The understanding of this description is fundamental to the understanding of "forming a number of lattice shaped portions" as recited in claim 1.

Appropriate correction and clarification are required.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

4. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1

Lines 10-11 recite "forming a large number of lattice-shaped portions by dividing said spatial part into lattices." A lattice, as defined in the specification, consists of crossed strips. It is not understood how a three dimensional spatial part is divided into lattices. The mapping from a three-dimensional figure to a two-dimensional lattice must be explained.

Appropriate correction and clarification are required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen (6089744).

This rejection is made by addressing those limitations of the claim, which were understood.

From line 66 in column 6 to line 20 in column 7, Chen discloses a gas flow simulation method where the spatial part is divided into blocks and for processing efficiency the regions are simulated with varying resolutions. Region 150 in figure 5, which is around an object, is simulated with the maximum resolution.

Facets are utilized by Chen for the simulation of various shapes and objects, and on lines 51 to 67 in column 7, Chen teaches how to modify the geometric expressions to address the vicinity of interior corners, which is a concave feature.

The gas simulation technique models the real world accurately by the combination of creating lattices to represent volumetric space such as those depicted in figures 4 and 5, varying the resolution of the lattice as function of the immediate

geometry of the object in the gas flow path, and utilizing the appropriate geometric expressions.

Relevant Prior Art

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

da Vitoria Lobo (5537641) discloses a method for modeling 3D fluid animation in computer graphics by setting the external boundaries or borders containing the fluid, and the internal boundaries or objects, which restrict the fluid, flow through the application of Navier-Stokes equations using a computational fluid dynamics technique.

Yu (6096088) discloses a method of modeling three dimensional object and the simulation of fluid flow around objects with opposed surfaces where elements from the first and second surfaces are matches, and a flow analysis between the injection point and the matched elements is performed.

Ueda (6336085) discloses a simulation method for fluid movement in an extraction system using object-oriented software to divide the extraction system into basic elements for calculation of fluid flow.

Watts (6928399) discloses a method and program for simulating time varying physical systems and specifically fluid flow systems, which utilizes discretization techniques where finite elements or volumes are created, and finite difference techniques are used to obtain quantitative solutions.

8. Any inquiry concerning this communication or earlier communication from the examiner should be direct to Albert W. Paladini whose telephone number is (571) 272-3748. The examiner can normally be reached from 7:00 to 3:00 PM on Monday, Tuesday, Thursday, and Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Leo P. Picard, can be reached on (571) 272-3749. The official fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Albert W. Paladini
Primary Examiner
Art Unit 2125

August 26, 2005